ECONOMIC SIGNIFICANCE

OF THE

FUTURES MARKET FOR SOYBEANS

By

FOREST GLEN WARREN

B.S., Purdue University, 1937
M.S., University of Illinois, 1939

AN ABSTRACT OF A THESIS
SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN AGRICULTURAL ECONOMICS IN THE GRADUATE SCHOOL OF THE UNIVERSITY OF ILLINOIS, 1945

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ACKNOWLEDGMENT

The writer desires to express his appreciation to all those who assisted in the preparation of the thesis of which the following is an abstract, especially Dr. L. J. Norton, Acting Head, Department of Agricultural Economics, University of Illinois; Mr. Paul Mehl, formerly with the Commodity Exchange Authority, United States Department of Agriculture; Dr. W. Edwards Beech of the Commodity Exchange Authority; Mr. F. C. Bisson, formerly with the United States Department of Agriculture; and Professor Elmer J. Working, University of Illinois. The writer is also indebted to Paul Mehl and Dana H. Myrick, formerly with the Commodity Exchange Administration, for use of material in an unpublished manuscript, "Trading in Chicago Soybean Futures—January, 1937, to January, 1941."

A portion of the data and charts used in the thesis were obtained from unpublished materials of the Commodity Exchange Authority, U.S.D.A. Some of the material and charts were assembled by the writer while an employee of the Department of Agriculture. The writer expresses his appreciation to the Commodity Exchange Authority for permission to use all such data. The conclusions drawn and opinions expressed in the study are those of the writer.

The writer acknowledges the courtesy of the officers of the Chicago Board of Trade who made available data on the soybean market which could not otherwise have been secured.

Economic Significance of the Futures Market for Soybeans

Development of the Soybean Marketing Machinery

The soybean industry in the United States probably has grown as rapidly as any industry based upon an agricultural product. From only 4,974,000 bushels in 1924, soybean production increased to 90,141,000 bushels in 1939, an increase of 1,712 percent in sixteen years. (Table 1.) This rapid growth created a need for an organized marketing system similar to that for other important grains.

Previous to 1924 the market for soybeans was almost entirely supported by the use of soybeans for seed, as the soybean was then a relatively unimportant crop for use other than forage.

Table 1. *Soybeans—Acerage, yield, production, and seasonal average price per bushel received by farmers, United States, 1919 to 1946*

Year	Acreage grown alone for all purposes	Total acreage	Acreage harvested for beans	Yield per acre	Production	U.S. farm price for crop year
	1,000 acres	*1,000 acres*	*1,000 acres*	*bushels*	*1,000 bushels*	*dollars*
1919	.....	.....	99	.....	.....	.....
1920	.....	.....	114	.....	.....	.....
1921	.....	.....	136	.....	.....	.....
1922	.....	.....	228	.....	.....	.....
1923	.....	.....	330	.....	.....	.....
1924	1,567	1,782	448	11.0	4,947	2.46
1925	1,539	1,785	415	11.7	4,875	2.34
1926	1,871	2,127	466	11.2	5,239	2.01
1927	2,057	2,350	568	12.2	6,938	1.81
1928	2,154	2,439	579	13.6	7,880	1.88
1929	2,429	2,807	708	13.3	9,438	1.88
1930	3,072	3,473	1,074	13.0	13,929	1.37
1931	3,835	4,304	1,141	15.1	17,260	.50
1932	3,704	4,165	1,001	15.1	15,158	.54
1933	3,537	3,957	1,044	12.9	13,509	.94
1934	5,764	6,207	1,556	14.9	23,157	.99
1935	6,966	7,503	2,915	16.8	48,901	.73
1936	6,127	7,183	2,359	14.3	33,721	1.27
1937	6,332	7,464	2,586	17.9	46,164	.85
1938	7,318	8,587	3,035	20.4	61,906	.67
1939	9,565	10,920	4,315	20.9	90,141	.81
1940	10,529	11,823	4,786	16.2	77,468	.90
1941	10,146	11,391	5,881	18.0	105,587	1.55
1942	13,879	15,102	10,008	18.7	187,155	1.61
1943	14,575	15,854	10,684	18.1	193,125	1.82
1944	13,428	14,383	10,415	18.3	190,406	2.05
1945	13,007	13,777	10,616	18.0	192,056	2.08[1]
1946	11,494	12,259	9,606	20.5	196,725	

[1] Preliminary.

Source:

Acerage, yield and production data:

1919–1923: "Crop production" December, 1941 (Crop Reporting Board, Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C.

1924–1928: *Agricultural Statistics 1941*, United States Department of Agriculture (United States Government Printing Office, Washington, 1941). p. 299.

1929–1944: *Agricultural Statistics 1946*, p. 142.

1945–1946: "Crops Production—1946 Annual Summary," (United States Department of Agriculture, Bureau of Agricultural Economics, Washington, D. C., December, 1946), pp. 73–74.

U. S. Farm Price:

1919–1945: "Crops and Markets," (United States Department of Agriculture, Bureau of Agricultural Economics, Washington, D. C.), Vol. 23, No. 1, January, 1946, p. 37.

One of the earliest attempts in the direction of organized soybean marketing was the "Linn County Soybean Growers' Association" organized in 1921 in Missouri for the marketing of seed beans[1]. This was followed by the establishment of the Tolono Soybean Association in Illinois in 1924, which was also interested primarily in seed marketing[2].

As early as 1926 the development of new uses for soybeans and the growth of the domestic soybean processing industry resulted in an increased demand for the soybean for use other than for seed. For an industry to grow, it must be certain of its source of raw materials. This is a major consideration in the industrial field, whether the raw material is timber, a mineral ore, or an agricultural product. For this reason, the processors of soybeans were among the first to realize the need for a soybean market which would insure them adequate supplies.

Two forces apparently brought the soybean marketing question to a head in 1928. The Grange-League-Federation of New York, representing thousands of farmers, wanted a source of better protein feed for dairy cows[3]. This demand was combined with the desire of Illinois farmers to find a crop which could be planted to replace the wheat which had been drowned out during the spring of 1928[4]. To insure the Grange-League-Federation and two other interested processors a supply of soybeans and also to insure the farmers a market, a contract was formulated between the three processors and the farmers. Although this system encouraged soybean production, producers felt that the processors held control of the market.

In 1929 the producers, through the Illinois Agricultural Association, organized the Illinois Soybean Marketing Association. This association held contracts with individual farmers for the marketing of soybeans[4]. This contract system of the Association was unsatisfactory in some respects both to the producers and the processors. In addition, the declining prices of the early thirties was a tremendous handicap to the success of the organization. As a result, the association ceased operating in 1933, and soybeans were marketed by farmers on the cash market without the aid of a central organization.

The development of the contract system for marketing soybeans, first through the united effort of processors and second through the united effort of producers, was basically a contract between producers and processors for delivery of beans after harvest. This development was very similar to the early development of the contracts between suppliers and manufacturers in other grains and produce. The basic difference is that in other grains and produce the early contract systems were not sponsored by organized groups to the same degree as was done in the soybean market.

The breakdown in the processor contract system and the subsequent producer contract with the cooperative marketing organization was not an indication that the contract for forward delivery was an undesirable feature in the marketing of soybeans, but that the types of contracting systems adopted did not fully satisfy the demands of the industry for

[1] Stuart O. Blythe, "Selling Soya," *Country Gentleman*. (September 30, 1922), Vol. XXXVII' No. 34, pp. 7–24.

[2] C. L. Stewart, W. L. Burlison, L. J. Norton, and O. L. Whalin, "Supply and Marketing Soybeans and Soybean Products," University of Illinois, Agricultural Experiment Station, *Bulletin No. 386*, (Urbana, Illinois, 1932), p. 485.

[3] C. C. Burns, "Farmers to Market Soybeans," *Wallace's Farmer* (January 18, 1930), Vol. 55, No. 3, pp. 101–102.

[4] Delos L. James, "Team Work Helps Illinois Farmers," *Nation's Business*, Vol. XVI, No. 11 (October, 1926), pp. 106–107.

an organized market in which contracts for future delivery could be freely made. The programs adopted did not make satisfactory provisions for the ready reflection of all factors affecting the market. Both programs were too rigid. As the soybean production increased, interest developed for the establishment of a futures market, as in other grains.

ESTABLISHMENT OF THE SOYBEAN FUTURES MARKET

As early as 1934 and 1935, considerable pressure was exerted by various groups interested in the soybean market for the establishment of futures trading in soybeans[5]. It was a universal practice for processors to purchase a large part of their yearly supply of beans in the fall when the crop was moving. "Some hedging of soybeans was done through the use of corn futures, some through cotton-seed oil futures."[6] In general, however, such hedging practices were not very successful. Nearly all of the processors were forced to assume long cash positions and were unprotected unless they had forward sales of products. Many of the large processors were able to protect their cash purchases by making forward sales, but many were not able to do so. No organized system for the shifting of risk existed. The practice of contracting with producers, as pointed out above, did not provide a sufficiently flexible system. In fact, during periods of price declines, a processor would be in an extremely unfavorable position if he had contracted for the soybeans with the producer at a given price and made no forward commitments in oil and meal.

The pressure behind the various groups which were dissatisfied with only a cash market for soybeans resulted in the appointment by the Chicago Board of Trade in January, 1936, of a committee to study the desirability of establishing a market for trading in soybean futures on an organized futures exchange. This was the third such committee to have been appointed for this purpose. Based on the findings of the committee and also upon the analysis of the Chicago cash market for soybeans and the increasing importance of Chicago as a soybean center, the Chicago Board of Trade inaugurated trading in soybean futures on October 5, 1936.

VOLUME OF TRADING IN SOYBEAN FUTURES

Active trading in the soybean market on the Chicago Board of Trade covered a period of six years and five months, from October 5, 1936, to February 20, 1943. The trading was small for the first three years; however, a spectacular increase occurred in 1940 and 1941. From a total volume of only 20,000,000 bushels in 1939, trading increased to 994,000,000 bushels in 1941 when trading in soybeans futures was outranked only by the trading in wheat futures on the Chicago Board of Trade. (Table 2). The decline in trading in soybean futures was nearly as spectacular as its rapid increase. The introduction of government control of soybean prices, soybean processors' margins and soybean product prices, plus the Department of

[5] Even prior to 1934 and 1935 men in the marketing field had given some thought to a soybean futures market. In 1932 in the University of Illinois Agricultural Experiment Station Bulletin No. 386, Doctors Stewart, Norton, Burlison, and Whalin pointed out the conditions which would have to be met before a soybean futures market could be established.

[6] Dean W. Malott, *Problems in Agricultural Marketing* (McGraw-Hill Book Co., New York, London, 1938), Chapter III, "Establishment of a Soybean Futures Market," p.p 98–105.

Agriculture's restrictive order on soybean purchases[7], effective February 18, 1943, practically prohibited processors, manufacturers, and seed dealers from purchasing soybean future contracts.

TABLE 2. *Volume of trading in the principal grains on the Chicago Board of Trade, 1937 through 1944*

Year	Wheat	Corn	Soybeans	Rye
	Millions of bushels	*Millions of bushels*	*Millions of bushels*	*Millions of bushels*
1937	10,889	2,546	27	318
1938	5,683	1,495	23	80
1939	5,027	1,444	20	209
1940	5,445	899	135	279
1941	3,801	784	994	330
1942	1,906	1,287	194	972
1943	1,825	205[2]	[1]	2,019
1944	1,582	183[3]		3,168

[1] Trading in soybeans was suspended on February 20, 1943. The volume of trading in January and February, 1943 amounted to only 445,000 bushels.
[2] Futures trading in corn was suspended on all contract markets on June 25, 1943.
[3] Futures trading in corn was open only 3½ months in 1944.

Source:
1937–1943: Commodity Exchange Authority, U.S.D.A.
1944: *Grain and Feed Journals, Consolidated*, Vol. xciv, No. 1, (January 19, 1945), p. 20.

REASONS FOR INCREASE IN VOLUME OF TRADING

Several factors caused the rapid increase in volume of trading in soybean futures in 1940 and 1941. Increase in production of soybeans from 46,164,000 bushels in 1937 to 105,587,000 bushels in 1941 was an important factor. With such a tremendous increase in production, volume of trading in futures would need to increase in order for the futures market to provide liquidity required for prompt execution of orders placed by processors of soybeans as well as grain merchants. For a futures market to be of economic importance to processors and merchants, volume of trading must be sufficient to insure that orders placed by these two types of hedgers will be executed with a minimum lapse of time.

Another factor in the growth of the soybean futures market was the fact that, as the market became more mature, hedgers were able to make better use of the market. Floor traders as well as the general public showed greater interest in the soybean market as the soybean became more widely known[8].

Federal farm programs were of considerable influence in increasing trading in soybean futures, as they brought about a decrease in trading in other grains. Trading in corn and wheat futures decreased materially after 1937 due to holding back of supplies by producers who received loans from the government, and the holding of grain unhedged by the government. With this decrease in trading, traders

[7] Commodity Credit Corporation Order No. 3, reprinted in part in "Grain and Feed Journals, Consolidated," Vol. 10, No. 4 (February 24, 1943), p. 156.
[8] A floor trader is a member of a market exchange who trades on the floor of the exchange largely for his own account as compared with the floor broker who engages in the executing of orders for others on a commission basis.

became interested in other possible markets such as the soybean market.

In addition to the above, the effect of increased soybean production on the price of soybeans was uncertain. It was doubtful if soybean processing capacity was sufficient to handle the additional production. Furthermore, it was felt that the increased meal production would not find a ready market. Futures trading in soybeans was influenced considerably in 1941 by the price uncertainty created by the increased demand for fats and oils. All of these factors led to increased activity in the futures market by hedgers as well as speculators.

OPEN CONTRACTS IN SOYBEAN FUTURES

Open contracts in soybean futures reached a maximum daily average of 11,821,000 bushels in June, 1941, after which the quantity open declined steadily because of federal regulations of soybeans and soybean products, which finally resulted in the suspension of trading in February, 1943.

The volume of trading in the soybean futures market, as well as other futures, is many times the volume of open contracts and many more times the amount of open contracts actually settled by delivery. For the 1941 futures, the volume of trading in each future was from 50 to 90 times the amount of contracts open at the beginning of the delivery month. Less than one per cent of the total volume of trading was settled by delivery of soybeans. For the same period, the wheat deliveries on contracts expressed as a percentage of total volume of contracts sold were slightly lower than for soybeans, and the corn deliveries represented between one and two per cent. This is, however, no indication in itself of excessive speculative trading, for the volume of trading must be of sufficient quantity so that hedgers can always find some one willing to take the opposite side of their trades. In addition, hedgers do not enter the market with the thought of accepting delivery on a contract, but rather to protect a cash position against unfavorable changes in prices. The futures contract is held open only until such time as the cash position can be liquidated either by an opposite cash transaction or through the actual merchandising of processed goods.

Based on analysis of contracts open on February 28, 1941, the large traders, largely hedgers, who individually held 200,000 bushels or more, referred to as "reporting traders," represented only 1.3 per cent of the total number of traders, but held 50 per cent of the open contracts.[9] (Table 3). The bulk of the traders in the soybean futures market held only from 1,000 to 4,000 bushels in open contracts. These small traders, representing 56 per cent of the total number of traders, represent the general public which holds the opposite side of the large holdings of hedgers.

[9] The rules and regulations promulgated under the Commodity Exchange Act, which places certain regulatory responsibilities in respect to futures markets under the authority of the United States Department of Agriculture, require any trader who holds or controls commitments in any one future on one market at any time amounting to 200,000 bushels or more to report all trades and open contracts to the federal regulatory agency.

TABLE 3. *Chicago Soybean Futures: Percentage of total number of accounts and percentage of total volume of open contracts held by size of account according to position as of February 28, 1941*

Size of position	Percent of total number of accounts	Percent of total volume of contracts held
1,000 bushels	*Per cent*	*Per cent*
1— 4	55.7	6.9
5— 9	23.1	8.7
10— 24	13.8	12.9
25— 49	4.2	9.5
50— 99	1.2	5.7
100—199	.7	6.5
200 and over	1.3	49.8
Total	100.0	100.0

TYPES OF TRADERS AND THEIR ECONOMIC FUNCTIONS

There has always been a great deal of discussion as to the functions of the different classes of traders in a futures market for any commodity. The opinion is prevalent among many that futures markets provide machinery which is used principally by speculators who make speculative trades in agricultural and other commodities in which futures trading is transacted[10]. This opinion is based on heresay and not upon interpretation of factual data. Previous studies by the United States Department of Agriculture and others have stressed the economic importance of the various classes of traders[11]. These studies have indicated that speculators are necessary to take the opposite side of hedging transactions. The present analysis presents additional evidence to support this view, in that it shows from an analysis of actual trades that speculators do take the opposite side of hedging trades, hence performing an essential activity in grain marketing.

An analysis of the open contracts in soybean futures, as of a given date, revealed that practically all types of occupations and professions were represented. Household servants and beauty parlor operators, as well as business executives, find their way to the futures market. In general, all traders in grain futures can be classified in three broad occupational groups: (1) pit or floor traders, (2) agricultural traders, and (3) outside traders[12]. Based on the data analyzed, only one trader out of 20 holding open contracts was a pit or floor trader; nine out of 20 were agricultural traders; and 10 were outside traders. (Table 4).

It is impossible to determine the exact reason why any group of

[10] J. M. Mehl, "Hedging in Grain Futures," United States Department of Agriculture, *Circular No. 151* (Government Printing Office, Washington, D. C., June, 1931), p. 1.

[11] "Fluctuations in Grain Futures," Senate Document No. 135, Sixty-Ninth Congress, First Session, June, 1926.

J. W. T. Duval and G. Wright Hoffman, "Speculative Transactions in the 1926 May Wheat Future," *U.S.D.A. Departmental Bulletin 1479.*

G. Wright Hoffman, *Futures Trading Upon Organized Commodity Markets in the United States* (University of Pennsylvania Press, Philadelphia, 1932).

James E. Boyle, *Speculation on the Chicago Board of Trade* (The MacMillan Co., New York, 1920).

[12] The pit or floor trader group includes those floor traders who execute trades for their own account on the exchange floor in the space provided for trading. This group also includes floor brokers who trade for their own account.

The agricultural group includes millers, processors, country elevator operators, terminal grain merchants, farmers, commission merchants and others interested primarily in agriculture and marketing of agricultural products.

The outside trader group, also referred to as the general public, includes business executives, people engaged in professional occupations, educational workers, craftsmen, clerical workers, merchants housewives, etc.

traders is in the market at a given time. However, each group as a whole performs certain functions essential to the operation, not only of the futures market, but the entire marketing machinery for a given commodity. The pit traders add liquidity to the market, the agricultural traders use the market for hedging and buying for future delivery, and the general public holds long term commitments and by so doing assumes the risk of price changes which are transferred from the agricultural traders by hedging operations.

TABLE 4. *Chicago Soybean Futures: Volume of open contracts by class of traders on February 28, 1941*

Class of trader	Number of traders				Volume held		
	Total	Long	Short	Long and Short	Long	Short	Long plus Short
					1,000 bushels	*1,000 bushels*	*1,000 bushels*
Pit or floor traders	60	10	21	29	3,346	2,218	5,564
Agricultural traders	563	396	131	36	4,056	5,170	9,226
Outside traders	687	384	241	62	2,544	2,551	5,095
Total	1,310	790	393	127	9,946[1]	9,939[1]	19,885

[1] The difference of 7,000 bushels between the volume of short commitments and long commitments is due to errors in the reporting of the data.

THE GENERAL PUBLIC AND THE FUTURES MARKET

Economic justification for long-term speculators, i. e. the general public, in the futures market is revealed in the analysis of open contracts by type of traders in the soy bean futures market. Both the general public and the pit traders who held open commitments held opposite ~~side~~ net positions to the hedgers. From the market standpoint this is desirable as the hedger not only wants traders in the market when he desires to buy and sell, but also traders who are willing to hold the opposite side of the contracts he desires to carry as a hedge. It is in this manner that the processors and merchandisers are able to pass the responsibility of risk due to price changes on to speculators. It is well to point out here that the speculative traders who hold open contracts in general are not the traders who carry on scalping transactions and in-and-out transactions[13]. The latter group, which consist of pit traders, act as intermediaries between hedgers and the long-term speculators.

The general public tended to hold a net long position in the grain futures market. This, however, was not the case for the soybean futures market, where the general public held a net short position during the early summer months at which time the hedgers held net long open commitments.

The exact reason as to why the general public has been willing to assume a short position in the spring in soybean futures is uncertain. However, it is known the large yearly increases in soybean production

[13] Scalping refers to buying and selling on very small price fluctuations. A trader who carries on extensive scalping transactions ordinarily closes each day with approximately the same quantity of purchases and sales.

In-and-out trading refers to the practice of holding open contracts for a relatively longer period than when scalping is practiced, but for a shorter period than an ordinary speculator. An in-and-out trader may hold open contracts for a day or longer, but usually not over a day.

were expected to reduce the price of soybeans. Apparently this was accepted sufficiently by the general public for them to assume a short position prior to harvest with the thought that the price would decline sufficiently to close out short positions advantageously.

PIT TRADERS AND THE FUTURES MARKET

Perhaps the most criticized group of traders in the futures market is the pit trader group. Critics of the futures markets continuously point to these traders as being non-essential, responsible for unnecessary price movements, and in general a non-essential part of the grain marketing machinery.

As pointed out previously, in an effective grain market there must be represented numerous buyers and sellers at all times not only to reflect changes in market conditions, but also to be available for the ready completion of orders placed by processors and merchants who desire to hedge. Hedging is a means of insurance against price changes. For this reason, a processor, who has entered into a cash transaction to buy or sell without any offsetting transaction to protect the cash position, must have available a liquid market in which he can cover his cash transaction immediately in order not to assume a possible loss from price changes. To protect himself against an unfavorable price change, the processor enters the futures market and places an order to offset the cash transaction. This order must be implemented immediately, for only a very small change in price may mean the difference between profit and loss to the processor.

When the processor's order reaches the market, it can be filled by another processor, an outside speculator, or a pit trader. The chances of other processors being in the market on the other side at a given time are not very great, as most processors as a rule are on the same side. Hence, it is not safe to rely on other processors. It is likely that outside speculators would be in the market at the time the processor's order was placed; however, this cannot be certain, for outside speculators usually hold commitments for a period of time, and it may be that none are interested in buying or selling at the particular instant a given processor is interested. This is the point where the pit traders enter the market. They usually buy and sell on small price changes and hold commitments for only a short length of time, usually less than a day. The pit traders are willing to take the opposite side of orders placed by processors on the hope that they can offset their transactions later by trading with outside speculators or other processors. By so doing, they perform a definite economic function of adding liquidity to the market.

The criticism that pit traders trade primarily among themselves is not based on fact. An analysis of the transactions of a given day, May 14, 1940, indicates that for this day only 12 per cent of the pit trader purchases and only 17 per cent of their sales were made with other pit traders; whereas 69 per cent of their purchases and 64 per cent of their sales were made with outside speculators, and 19 per cent of their purchases and 19 per cent of their sales were made with hedgers. (Table 5).

It is realized, of course, that the above analysis is based on only one day's trading; however, it is representative of the trading. It is also realized that at times the pit traders do trade extensively among themselves and create "excessive" speculation. This, however, is the exception rather than the rule.

TABLE 5. *Chicago Soybean Futures—Number and volume of trades made by each class of trader with each of the three classes on May 14, 1940*

Trades between	Purchases				Sales			
	Number of trades		Volume		Number of trades		Volume	
	Number	*Per cent*	*1,000 bushels*	*Per cent*	*Number*	*Per cent*	*1,000 bushels*	*Per cent*
Hedgers and:								
Hedgers	4	11.1	21	5.7	4	13.8	21	16.5
Outside speculators[1]	21	58.3	247	66.9	9	31.0	57	44.9
Pit traders	11	30.6	101	27.4	16	55.2	49	38.6
Total	36	100.00	369	100.0	29	100.0	127	100.0
Pit traders and:								
Hedgers	16	18.8	49	16.3	11	18.6	101	31.7
Outside speculator[1]	59	69.4	198	66.0	38	64.4	164	51.6
Pit traders	10	11.8	53	17.7	10	17.0	53	16.7
Total	85	100.0	300	100.0	59	100.0	318	100.0
Outside speculators and:								
Hedgers	9	9.2	57	13.6	21	16.0	247	38.4
Outside speculators[1]	51	52.0	199	47.4	51	38.9	199	30.9
Pit traders	38	38.8	164	39.0	59	45.1	198	30.7
Total	98	100.0	420	100.0	131	100.0	644	100.0
All trades	219	.....	1,089	.....	219	.....	1,089	.....

[1] Including unclassified commission house customers.

Source: Commodity Exchange Authority, U.S.D.A.

MEASURES OF SPECULATIVE ACTIVITY

It would be extremely difficult, if not impossible, to develop a purely objective procedure to determine when "excessive" speculation exists and when there is just the proper amount. The writer makes no attempt to present such a measure. Certain market relationships do exist, however, which are useful as indicators of the speculative activity of scalpers and in-and-out traders. It is possible to determine the extent of large scale, long-term speculative transactions from the reports submitted by reporting traders to the United States Department of Agriculture. However, it is more difficult to determine the relative scale of the transactions of scalpers and in-and-out traders. Five ratios as possible measures of the speculative transactions of these groups are presented:

(1) Volume of trading to open contracts,
(2) Volume of trading to visible supply,
(3) Volume of trading to open contracts of traders who report to the Department of Agriculture,
(4) Open contracts to visible supply,
(5) Scalping and in-and-out trading of pit traders for own account to total open contracts.

The first of these measures is useful as an indicator of the relationship between volume of trading and open contracts, but it does not necessarily indicate speculative activity, for trading of hedgers influences the ratio the same as speculative trades.

The measure in which the visible supply figure is used as one factor have some value as an indication of total speculative activity in grains other than soybeans, especially wheat and corn. The visible supply information available for soybeans does not have sufficient coverage of existing supplies to be useful for this purpose as the holdings of the large processors are not included. The ratios have little value as indicators of scalping and in-and-out trading, for this type of speculative trading is only a portion of the total volume of trading and, in addition, does not enter into open contracts.

The ratio of volume of trading to open contracts of reporting hedgers is based on the theory that as the amount of hedging increases, the total volume of trading should increase proportionately. This ratio is satisfactory only insofar as one is concerned with relationship between total trading and hedging, and has no particular value as a measure of short-time speculative activity.

The best measure of the relative amount of scalping and in-and-out trading by the professional speculative traders is the ratio of scalping and in-and-out trading of pit traders to open contracts. In order to determine the relative amount of scalping and in-and-out speculative trading, a ratio must be used which has as a minimum one factor representing the type of speculative activity for which a measure is desired. Of the various measures listed, only the ratio of scalping and in-and-out trading of pit traders to open contracts indicates the extent of the short-time speculative activity.

To test the above ratio as a measure of short-time speculative activity, it was applied to a three-week period in 1941 when it was sus-

pected that excessive speculative trading by short-time speculators existed with soybean futures market. For this period the ratio increased from 7.5 to 9.6 per cent to 11.6 to 15.8 per cent. (Table 6). The analysis indicated definitely that the volume of trading of scalpers and in-and-out traders increased considerably relative to open contracts. In view of this and in view of a very large increase in price from 142½ cents to 202 cents for the May future, and an increase in volume of weekly trading from 14,597,000 bushels to 32,758,000 bushels, the volume of trading of the scalpers and in-and-out traders may have been partially responsible for the unseasonable increase in soybean prices.

TABLE 6. *Scalping and in-and-out trading of reporting and non-reporting traders clearing through pit trader houses as per cent of total open contracts in soybean futures, Aug. 1, 1941—Jan. 9, 1942*

Date	1941 Oct. future	1941 Dec. future	1942 May future	1942 July future	All futures
1941	Per cent	Per cent	Per cent	Per cent	Per cent
Aug. 1	6.0	14.2	46.3	.....	9.1
" 8	6.0	15.5	34.3	.....	9.6
" 15	4.6	12.3	11.3	.....	7.5
" 22	9.2	13.1	24.0	.....	11.6
" 29	7.7	16.7	21.6	.....	13.2
Sept. 5	6.9	21.2	24.1	.....	15.8
" 12	3.4	18.5	30.2	.....	15.6
" 19	2.9	15.3	18.1	.....	11.9
" 26	3.9	9.5	11.4	.....	8.2
Oct. 3	6.2	13.4	17.6	.....	12.7
" 10	5.9	9.8	10.1	.....	9.2
" 17	4.5	15.4	13.0	.....	13.1
" 24	.....	9.1	9.3	.....	9.0
" 31	.....	10.1	14.0	19.8	12.0
Nov. 7	.....	17.3	17.9	19.4	17.6
" 14	.....	10.4	10.5	10.6	10.4
" 21	.....	5.5	7.5	4.6	6.6
" 28	.....	5.4	7.2	10.4	6.9
Dec. 5	.....	13.0	14.5	14.6	14.3
" 12	.....	2.7	.8	.3	.9
" 19	.....	6.4	5.6	2.3	5.0
" 26	.....	.....	3.5	2.0	3.1
1942					
Jan. 2	.....	.....	9.8	7.8	9.3
" 9	.....	.....	10.6	6.6	9.7

FUTURES PRICES VERSUS CASH PRICES

The soybean futures market under normal conditions, as any other type of market, reflects the economic forces influencing price. In general, the movement of the monthly average of the daily price of the dominant future, i. e., the "near-by" future, on the Chicago soybean futures market followed closely the average price paid for No. 2 yellow cash soybeans at Chicago. During one period in each year this general relationship did not hold. From May to September the cash market reflects the price of old crop beans, whereas the futures market is strongly influenced by the new crop, thus making the futures market lower than the cash market.

It is extremely difficult to state whether the cash market follows the futures market or whether the futures follows the cash. However, since the futures market is a more liquid market than the cash market, changes in supply and demand factors are more apt to be more quickly reflected in the futures than in the cash market. For this reason, changes in the

future prices may precede those in the cash prices. However, it must be remembered that these changes in the prices of the futures are brought about by changes in the economic forces in the market, and if the cash market were as liquid as the futures market, price changes would occur simultaneously in each market. Nevertheless, it must be kept in mind that the element of speculation is present in the futures market to a greater degree than in the cash market, and changes in the future prices may not always be a direct result of the factors determining the cash market[14].

EFFECT OF THE SOYBEAN FUTURES MARKET ON PRICES RECEIVED BY FARMERS

The marketing of soybeans by farmers is facilitated directly by the futures market, owing to the market services available through the organized market and the hedging facilities provided for processors and others who desire to hedge cash purchases. An active futures market, by providing hedging facilities, tends to reduce the spread between the price received by farmers and prices received for soybean products.

TABLE 7. *Spread between the Illinois farm price of soybeans and the value per bushel of oil and meal at Decatur by crop years 1933–34 to 1943–44*

Year	Average Spread	Maximum Spread	Minimum Spread	Range in Spread
	Cents	*Cents*	*Cents*	*Cents*
1933–34	41	Sept. 63	July —24	87
1934–35	54	Oct. 65	June 34	31
1935–36	46	Oct. 60	May 24	36
Average	47	63	11	51
1936–37	50	Sept. 50	May 18	32
1937–38	31	Sept. 39	June 21	18
1938–39	36	Sept. 61	May 17	44
1939–40	33	Oct. 36	Mar. 16	20
Averages	33	45	18	27
1940–41	40	Aug. 30	May 16	14
1941–42	44	Sept. 45	July 26	19
1942–43	37	Aug. 59	Mar. 29	30
1943–44	36	Sept. Oct. 43	Apr. 31[1]	12
Average	39	44	25	19
Average for period	40			

[1] March, April, May, July and August.

It would be impossible to measure the full economic effect of the futures market in soybeans upon the price received by the farmers for soybeans. However, the spread between the value per bushel of soybean products, i. e., soybean meal and soybean oil, and the price received by Illinois farmers decreased from 47 cents for the three crop years prior to the opening of the futures market to 33 cents for the years following its opening. For 1940-41 through 1943-44 the spread increased to 39 cents. (Table 7). The increase in spread probably was a

[14] G. Wright Hoffman, "Futures Trading and the Cash Grain Market," *U.S.D.A. Circular No. 201* (1932), p. 36.

reflection of increased processing costs. In addition, the seasonal range in the Illinois farm price has decreased from a low of 55 cents per bushel prior to establishment of the futures market to a low of 25 cents when the futures market was active or from 1936-37 through 1941-42. It is impossible to determine how much these two reductions were caused by the futures market and how much by technological improvements in processing, increased volume of processing, or other factors.

ADVANTAGES OF THE SOYBEAN FUTURES IN THE SOYBEAN MARKETING SYSTEM

The foregoing analysis of the soybean futures market indicates the following advantages:

1. A central organized market provides a place in which all factors affecting price can be readily brought together for the determination of prices and dissemination of market news.
2. It develops standard procedures and promotes uniformity in trading practices.
3. It establishes a continuous and sensitive market in which numerous buyers and sellers are always present.
4. It creastes a liquid market in which hedging facilities are available for processors and others who desire to hedge cash positions.
5. The hedging facilities of the futures market tend to reduce the spread between the value of soybean products and the prices received by farmers.

VITA

Birth and Marriage: Forest Glen Warren, the son of Joseph Allen Warren and May Philpot Warren, was born on a farm at Kouts, Porter County, Indiana, December 15, 1913. He was married to Olive Louise Lauterbach of Itasca, Illinois, on October 17, 1942.

Educational Training: He attended a rural grade school in Porter County, Indiana, an urban grade school at LaCrosse, LaPorte County, Indiana, and graduated with the honor of valedictorian from the Pleasant Township High School, Kouts, Indiana, in 1932. He attended Purdue University from 1933 to 1937, receiving the degree of Bachelor of Science in Agriculture. At this institution he was a distinguished student for several semesters. He entered the University of Illinois in the fall of 1937 and received the degree of Master of Science in Agricultural Economics in 1939.

Positions Held: From September, 1937, to March, 1941, he was an Assistant in Agricultural Economics, University of Illinois. From March, 1941, to July, 1942, he was an Associate Economist with the Commodity Exchange Administration, U.S.D.A., Chicago, Illonois. From July, 1942, to October, 1945, he was with the Foreign Economic Administration and its predecessor organization, the Lend Lease Administration. He held the position of Chief, Program Staff, British Empire and Middle East Branch. The Foreign Economic Administration was liquidated in October, 1945, and the remaining functions transferred to other agencies, including the Department of Commerce. On October 20, 1945, he was appointed British Empire Area Officer, Office of International Trade, Department of Commerce. On December 17, 1946, he was appointed Chief, Middle East Section, of the same office.

Organizations and Fraternities: He is a member of the American Economic Association, the American Farm Economic Association, the American Statistical Association, the American Soybean Association, Sigma XI, Gamma Sigma Delta, and Alpha Chi Rho Fraternities.